Volunteer Lake Assessment Program Individual Lake Reports

THORNDIKE POND, JAFFREY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,560	**Max. Depth (m):**	7	**Flushing Rate (yr^{-1}):**	1.7
Surface Area (Ac.):	265	**Mean Depth (m):**	3.4	**P Retention Coef:**	0.64
Shore Length (m):	6,000	**Volume (m^3):**	3,513,500	**Elevation (ft):**	1159

TROPHIC CLASSIFICATION

Year	Trophic class
1998	OLIGOTROPHIC
2009	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

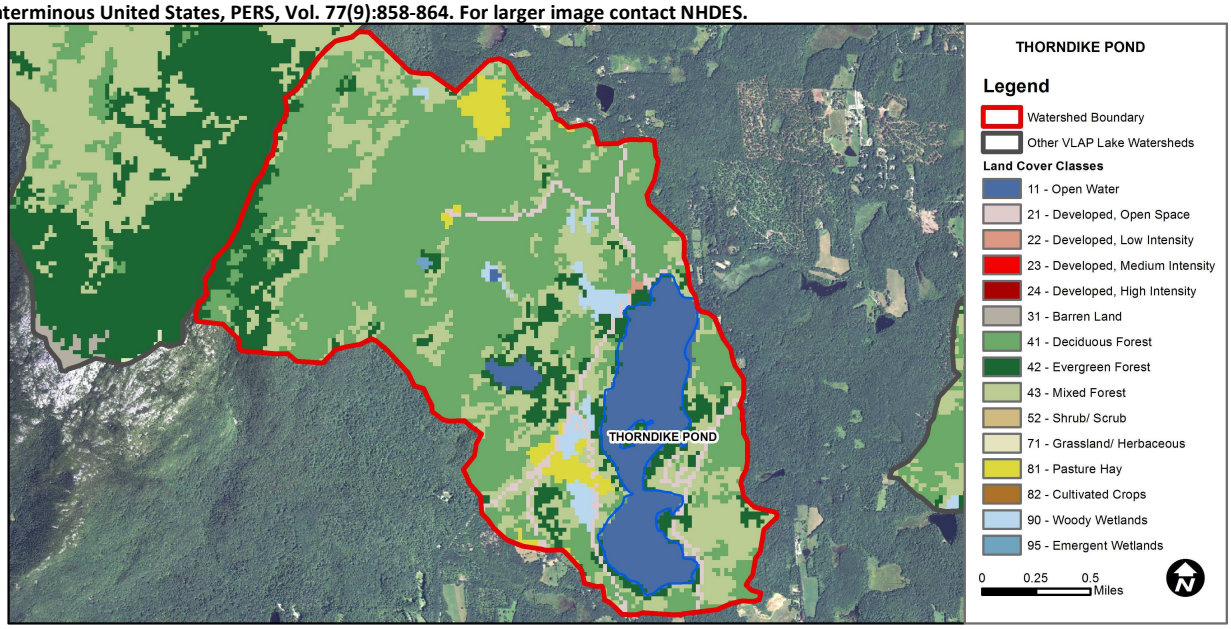
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

THORNDIKE POND - CAMP WANOCKSETT BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
THORNDIKE POND - CAMP WA-KLO BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
THORNDIKE POND - TOWN BEACH	Escherichia coli	Slightly Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. Exceedances are <2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	3.08	Deciduous Forest	49.8	Pasture Hay	2.55
Developed-Low Intensity	0.08	Evergreen Forest	10.06	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	21.11	Woody Wetlands	2.07
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0.08

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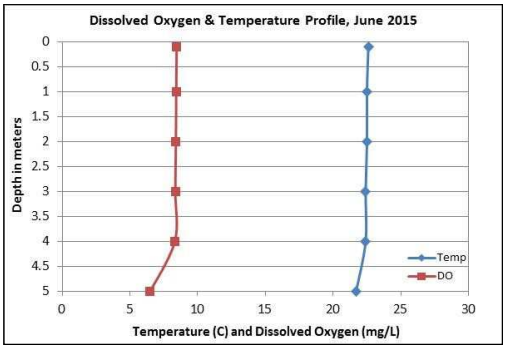
Thorndike Pond, Jaffrey

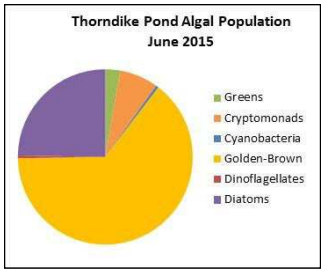
2015 Data Summary

Recommended Actions: The increased frequency and intensity of storm events may be contributing to decreased pH and increased turbidity at the deep spot by flushing wetland systems rich in organic acids, dissolved organic carbon, and high in color. Analyze deep spot samples for apparent color to determine if the pond has become darker over time. The DES Jody Connor Limnology Center (JCLC) can analyze samples free of charge. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low in June and increased to moderate levels in July and August. The 2015 average chlorophyll level remained stable with 2014 and was slightly less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **Conductivity/Chloride:** Deep spot, North West Inlet and Outlet conductivity and chloride levels were low and approximately equal to the state medians. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began. South West Inlet conductivity and chloride levels were slightly greater than the state medians but remained much less than a level of concern.
- **Total Phosphorus:** Deep spot and Outlet phosphorus levels remained stable and low from June through August. Average epilimnetic phosphorus increased slightly from 2014 but was less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began. North West Inlet phosphorus levels were within an average range for that station. South West Inlet phosphorus levels were elevated in July likely due to stagnant conditions.
- **Transparency:** Transparency (NVS) was lower in June and then increased (improved) through August. Average transparency remained stable with 2014 and was slightly greater than (better than) the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years. Transparency measured with the viewscope (VS) was slightly better than that measured without and likely a better representation of actual conditions.
- **Turbidity:** Epilimnetic and Hypolimnetic turbidities were slightly above average in 2015 and the dry weather conditions and lack of pond flushing may have contributed to an increase in organic matter throughout the pond. North West Inlet and Outlet turbidities were within average ranges for those stations. South West Inlet turbidity was slightly elevated in July during the stagnant conditions.
- **pH:** Deep spot and tributary pH levels were less than the desirable range 6.5-8.0 units and slightly acidic. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.





Station Name	Table 1. 2015 Average Water Quality Data for THORNDIKE POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	3.5	3.49	6	36.8	8	3.95	4.27	1.24	6.18
Hypolimnion				38.7	8			1.59	6.36
North West Inlet			6	37.9	15			1.57	6.06
Outlet				38.8	6			1.10	6.45
South West Inlet			15	49.0	15			1.40	6.08

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.